WEST

Generate Collection | Print

Search Results - Record(s) 1 through 4 of 4 returned.

☐ 1. Document ID: US 6004922 A

L9: Entry 1 of 4 File: USPT Dec 21, 1999

DOCUMENT-IDENTIFIER: US 6004922 A
TITLE: Laundry detergent compositions comprising cationic surfactants and modified polyamine soil dispersents

Brief Summary Paragraph Right (101):
Stabilizers useful in this invention should be water soluble or water dispersible. The stabilizing agents that are useful herein include sulfonate-type hydrotropes, linear or branched alkylbenzenesulfonates, paraffin a]sulfonates, and other thermally-stable alkyl sulfonate variations with from about 4 to about 20 carbon atoms. Preferred agents include sodium dodecylbenzenesulfonate, sodium cumenesulfonate, sodium toluenesulfonate, sodium xylenesulfonate, and mixtures thereof. When higher levels of stabilizers are used, mixtures of hydrotropes and/or other stabilizers are preferred over pure components to insure full integration into the oligomer and to reduce the possibility of crystallization of the stabilizer.

Brief Summary Paragraph Right (105):
Detersive Surfactants--Nonlimiting examples of surfactants useful herein typically at levels from about 1% to about 55%, by weight, include the conventional C.sub.11 -C.sub.18 alkyl benzene sulfonates ("LAS") and primary, branched-chain and random C.sub.10 -C.sub.20 alkyl sulfates ("AS"), the C.sub.10 -C.sub.18 secondary (2,3) alkyl sulfates of the formula CH.sub.3 (CH.sub.2).sub.x (CHOSO.sub.3.sup.- M.sup.+) CH.sub.2 CH.sub.3 and CH.sub.3 (CH.sub.2).sub.y (CHOSO.sub.3.sup.- M.sup.+)CH.sub.2 CH.sub.3 where x and (y+1) are integers of at least about 7, preferably at least about 9, and M is a water-solubilizing cation, especially sodium, unsaturated sulfates such as oleyl sulfate, the C.sub.10 -C.sub.18 alkyl alkoxy sulfates ("AE.sub.x S"; especially EO 1-7 ethoxy sulfates), C.sub.10 -C.sub.18 alkyl alkoxy carboxylates (especially the EO 1-5 ethoxycarboxylates), the C.sub.10-18 glycerol ethers, the C.sub.10 -C.sub.18 alkyl polyglycosides and their corresponding sulfated polyglycosides, and C.sub.12 -C.sub.18 alpha-sulfonated fatty acid esters. If desired, the conventional nonionic and amphoteric surfactants such as the C.sub.12 -C.sub.18 alkyl ethoxylates ("AE") including the so-called narrow peaked alkyl ethoxylates and C.sub.6 -C.sub.12 alkyl phenol alkoxylates (especially ethoxylates and mixed ethoxy/propoxy), C.sub.12 -C.sub.18 betaines and sulfobetaines ("sultaines"), C.sub.10 -C.sub.18 amine oxides, and the like, can also be included in the overall compositions. The C.sub.10 -C.sub.18 N-alkyl polyhydroxy fatty acid amides can also be used. Typical examples include the C.sub.12 -C.sub.18 N-methylglucamides. See WO 9,206,154. Other sugar-derived surfactants include the N-alkoxy polyhydroxy fatty acid amides, such as C.sub.10 -C.sub.18 N-(3-methoxypropyl) glucamide. The N-propyl through N-hexyl C.sub.12 -C.sub.18 glucamides can be used for low sudsing. C.sub.10 -C.sub.20 conventional soaps may also be used. If high sudsing is desired, the branched-chain C.sub.10 -C.sub.16 soaps may be used. Mixtures of anionic and nonionic surfactants are especially useful. Other conventional useful surfactants are listed in standard texts.

Brief Summary Paragraph Right (108):
To illustrate this technique in more detail, a porous hydrophobic silica (trademark SIPERNAT D10, DeGussa) is admixed with a proteolytic enzyme solution containing 3%-5% of C.sub.13-15 ethoxylated alcohol (EO 7) nonionic surfactant. Typically, the enzyme/surfactant solution is 2.5 X the weight of silica The resulting powder is

dispersed with stirring in silicone oil (various silicone oil viscosities in the range of 500-12,500 can be used). The resulting silicone oil dispersion is emulsified or otherwise added to the final detergent matrix. By this means, ingredients such as the aforementioned enzymes, bleaches, bleach activators, bleach catalysts, photoactivators, dyes, fluorescers, fabric conditioners and hydrolyzable surfactants can be "protected" for use in detergents, including liquid laundry detergent compositions.

Brief Summary Paragraph Right (111):
Enzymes--Enzymes can be included in the present detergent compositions for a variety of purposes, including removal of protein-based, carbohydrate-based, or triglyceride-based stains from surfaces such as textiles, for the prevention of refugee dye transfer, for example in laundering, and for fabric restoration. Suitable enzymes include proteases, amylases, lipases, cellulases, peroxidases, and mixtures thereof of any suitable origin, such as vegetable, animal, bacterial, fungal and yeast origin. Preferred selections are influenced by factors such as pH-activity and/or stability optima, thermostability, and stability to active detergents, builders and the like. In this respect bacterial or fungal enzymes are preferred, such as bacterial amylases and proteases, and fungal cellulases.

Brief Summary Paragraph Right (128):
The bleaching agents used herein can be any of the bleaching agents useful for detergent compositions in textile cleaning that are now known or become known. These include oxygen bleaches as well as other bleaching agents. Perborate bleaches, e.g., sodium perborate (e.g., mono- or tetra-hydrate) can be used herein.

Brief Summary Paragraph Right (158):
SRA's can include a variety of charged, e.g., anionic or even cationic species, see U.S. Pat. No. 4,956,447, issued Sep. 11, 1990 to Gosselink, et al., as well as noncharged monomer units, and their structures may be linear, branched or even star-shaped. They may include capping moieties which are especially effective in controlling molecular weight or altering the physical or surface-active properties. Structures and charge distributions may be tailored for application to different fiber or textile types and for varied detergent or detergent additive products.

2. Document ID: US 5968893 A

L9: Entry 2 of 4 File: USPT Oct 19, 1999

DOCUMENT-IDENTIFIER: US 5968893 A
TITLE: Laundry detergent compositions and methods for providing soil release to cotton fabric

Brief Summary Paragraph Right (8):
Other attempts to produce a soil release agent for cotton fabric have usually taken the form of permanently modifying the chemical structure of the cotton fibers themselves by reacting a substrate with the polysaccharide polymer backbone. For example, U.S. Pat. No. 3,897,026 issued to Kearney, discloses cellulosic textile materials having improved soil release and stain resistance properties obtained by reaction of an ethylene-maleic anhydride co-polymer with the hydroxyl moieties of the cotton polymers. One perceived drawback of this method is the desirable hydrophilic properties of the cotton fabric are substantially modified by this process.

Brief Summary Paragraph Right (10):
U.S. Pat. No. 3,948,838 issued to Hinton, et alia describes high molecular weight (500,000 to 1,500,000) polyacrylic polymers for soil release. These materials are

used preferably with other fabric treatments, for example, durable press textile reactants such as formaldehyde. This process is also not readily applicable for use by consumers in a typical washing machine.

Brief Summary Paragraph Right (63):
Stabilizers useful in this invention should be water soluble or water dispersible. The stabilizing agents that are useful herein include sulfonate-type hydrotropes, linear or branched alkylbenzenesulfonates, paraffin sulfonates, and other thermally-stable alkyl sulfonate variations with from about 4 to about 20 carbon atoms. Preferred agents include sodium dodecylbenzenesulfonate, sodium cumenesulfonate, sodium toluenesulfonate, sodium xylenesulfonate, and mixtures thereof. When higher levels of stabilizers are used, mixtures of hydrotropes and/or other stabilizers are preferred over pure components to insure full integration into the oligomer and to reduce the possibility of crystallization of the stabilizer.

Brief Summary Paragraph Right (67):
SRA's can include a variety of charged, e.g., anionic or even cationic species, see U.S. Pat. No. 4,956,447, issued Sep. 11, 1990 to Gosselink, et al., as well as noncharged monomer units, and their structures may be linear, branched or even star-shaped. They may include capping moieties which are especially effective in controlling molecular weight or altering the physical or surface-active properties. Structures and charge distributions may be tailored for application to different fiber or textile types and for varied detergent or detergent additive products.

Brief Summary Paragraph Right (134):
The laundry detergent compositions according to the present invention may additionally comprise at least about 0.01%, preferably at least about 0.1%, more preferably at least about 1% by weight, of the following detersive surfactants. Nonlimiting examples of surfactants useful herein typically at levels from about 1% to about 55%, by weight, include the conventional C.sub.11 -C.sub.18 alkyl benzene sulfonates ("LAS") and primary, branched-chain and random C.sub.10 -C.sub.20 alkyl sulfates ("AS"), the C.sub.10 -C.sub.18 secondary (2,3) alkyl sulfates of the formula CH.sub.3 (CH.sub.2).sub.x (CHOSO.sub.3.sup.- M.sup.+) CH.sub.3 and CH.sub.3 (CH.sub.2).sub.y (CHOSO.sub.3.sup.- M.sup.+) CH.sub.2 CH.sub.3 where x and (y+1) are integers of at least about 7, preferably at least about 9, and M is a water-solubilizing cation, especially sodium, unsaturated sulfates such as oleyl sulfate, the C.sub.10 -C.sub.18 alkyl alkoxy sulfates ("AE.sub.x S"; especially EO 1-7 ethoxy sulfates), C.sub.10 -C.sub.18 alkyl alkoxy carboxylates (especially the EO 1-5 ethoxycarboxylates), the C.sub.10-18 glycerol ethers, the C.sub.10 -C.sub.18 alkyl polyglycosides and their corresponding sulfated polyglycosides, and C.sub.12 -C.sub.18 alpha-sulfonated fatty acid esters. If desired, the conventional nonionic and amphoteric surfactants such as the C.sub.12 -C.sub.18 alkyl ethoxylates ("AE") including the so-called narrow peaked alkyl ethoxylates and C.sub.6 -C.sub.12 alkyl phenol alkoxylates (especially ethoxylates and mixed ethoxy/propoxy), C.sub.12 -C.sub.18 betaines and sulfobetaines ("sultaines"), C.sub.10 -C.sub.18 amine oxides, and the like, can also be included in the overall compositions. The C.sub.10 -C.sub.18 N-alkyl polyhydroxy fatty acid amides can also be used. Typical examples include the C.sub.12 -C.sub.18 N-methylglucamides. See WO 9,206,154. Other sugar-derived surfactants include the N-alkoxy polyhydroxy fatty acid amides, such as C.sub.10 -C.sub.18 N-(3-methoxypropyl) glucamide. The N-propyl through N-hexyl C.sub.12 -C.sub.18 glucamides can be used for low sudsing. C.sub.10 -C.sub.20 conventional soaps may also be used. If high sudsing is desired, the branched-chain C.sub.10 -C.sub.16 soaps may be used. Mixtures of anionic and nonionic surfactants are especially useful. Other conventional useful surfactants are listed in standard texts.

Brief Summary Paragraph Right (138):
The preferred compositions of the present invention also comprise at least about 0.01%, preferably at least 0.1%, more preferably from about 1% to about 95%, most preferably from about 1% to about 80% by weight, of an nonionic detersive surfactant. Preferred nonionic surfactants such as C.sub.12 -C.sub.18 alkyl ethoxylates ("AE") including the so-called narrow peaked alkyl ethoxylates and C.sub.6 -C.sub.12 alkyl phenol alkoxylates (especially ethoxylates and mixed ethoxy/propoxy), block alkylene oxide condensate of C.sub.6 to C.sub.12 alkyl phenols, alkylene oxide condensates of C.sub.8 -C.sub.22 alkanols and ethylene

oxide/propylene oxide block polymers (Pluronic.TM.-BASF Corp.), as well as semi polar nonionics (e.g., amine oxides and phosphine oxides) can be used in the present compositions. An extensive disclosure of these types of surfactants is found in U.S. Pat. No. 3,929,678, Laughlin et al., issued Dec. 30, 1975, incorporated herein by reference.

Brief Summary Paragraph Right (163):
To illustrate this technique in more detail, a porous hydrophobic silica (trademark SIPERNAT D10, DeGussa) is admixed with a proteolytic enzyme solution containing 3%-5% of C.sub.13-15 ethoxylated alcohol (EO 7) nonionic surfactant. Typically, the enzyme/surfactant solution is 2.5 X the weight of silica. The resulting powder is dispersed with stirring in silicone oil (various silicone oil viscosities in the range of 500-12,500 can be used). The resulting silicone oil dispersion is emulsified or otherwise added to the final detergent matrix. By this means, ingredients such as the aforementioned enzymes, bleaches, bleach activators, bleach catalysts, photoactivators, dyes, fluorescers, fabric conditioners and hydrolyzable surfactants can be "protected" for use in detergents, including liquid laundry detergent compositions.

Brief Summary Paragraph Right (166):
Enzymes can be included in the present detergent compositions for a variety of purposes, including removal of protein-based, carbohydrate-based, or triglyceride-based stains from surfaces such as textiles, for the prevention of refugee dye transfer, for example in laundering, and for fabric restoration. Suitable enzymes include proteases, amylases, lipases, cellulases, peroxidases, and mixtures thereof of any suitable origin, such as vegetable, animal, bacterial, fungal and yeast origin. Preferred selections are influenced by factors such as pH-activity and/or stability optima, thermostability, and stability to active detergents, builders and the like. In this respect bacterial or fungal enzymes are preferred, such as bacterial amylases and proteases, and fungal cellulases.

3. Document ID: US 5834412 A

L9: Entry 3 of 4 File: USPT Nov 10, 1998

DOCUMENT-IDENTIFIER: US 5834412 A
TITLE: Soil release polymers with fluorescent whitening properties

Brief Summary Paragraph Right (5):
The operation of brightening commercial fabrics is one of the highest value-added treatments of a laundry detergent aside from the primary role of soil removal from the fabric itself. With the aid of fluorescent whitening agents (FWA's), also referred to as optical brighteners, optical compensation of the yellow cast that develops on substrates such as fabric can be achieved. The yellow cast is produced by the absorption of short-wavelength light (violet-to-blue). With fluorescent whitening agents this lost light is in part replaced, thus a complete white is attained. This additional visible light is produced by the brightener by means of fluorescence. Optical whitening agents absorb the invisible ultraviolet portion of the daylight spectrum and convert this energy into the longer-wavelength visible position of the spectra. Fluorescent whitening, therefore, is based on the addition of light, whereas the older methods such as "blueing" is achieved by subtraction of light by the addition of blue or blue-violet dyes to textiles.

Brief Summary Paragraph Right (76):
Nonlimiting examples of surfactants useful herein typically at levels from about 1% to about 55%, by weight, include the conventional C.sub.11 -C.sub.18 alkyl benzene sulfonates ("LAS") and primary, branched-chain and random C.sub.10 -C.sub.20 alkyl

sulfates ("AS"), the C.sub.10 -C.sub.18 secondary (2,3) alkyl sulfates of the formula CH.sub.3 (CH.sub.2).sub.x (CHOSO.sub.3.sup.- M.sup.+) CH.sub.3 and CH.sub.3 (CH.sub.2).sub.y (CHOSO.sub.3.sup.- M.sup.+) CH.sub.2 CH.sub.3 where x and (y+1) are integers of at least about 7, preferably at least about 9, and M is a water-solubilizing cation, especially sodium, unsaturated sulfates such as oleyl sulfate, the C.sub.10 -C.sub.18 alkyl alkoxy sulfates ("AE.sub.x S"; especially EO 1-7 ethoxy sulfates), C.sub.10 -C.sub.18 alkyl alkoxy carboxylates (especially the EO 1-5 ethoxycarboxylates), the C.sub.10-18 glycerol ethers, the C.sub.10 -C.sub.18 alkyl polyglycosides and their corresponding sulfated polyglycosides, and C.sub.12 -C.sub.18 alpha-sulfonated fatty acid esters. If desired, the conventional nonionic and amphoteric surfactants such as the C.sub.12 -C.sub.18 alkyl ethoxylates ("AE") including the so-called narrow peaked alkyl ethoxylates and C.sub.6 -C.sub.12 alkyl phenol alkoxylates (especially ethoxylates and mixed ethoxy/propoxy), C.sub.12 -C.sub.18 betaines and sulfobetaines ("sultaines"), C.sub.10 -C.sub.18 amine oxides, and the like, can also be included in the overall compositions. The C.sub.10 -C.sub.18 N-alkyl polyhydroxy fatty acid amides can also be used. Typical examples include the C.sub.12 -C.sub.18 N-methylglucamides. See WO 9,206,154. Other sugar-derived surfactants include the N-alkoxy polyhydroxy fatty acid amides, such as C.sub.10 -C.sub.18 N-(3-methoxypropyl) glucamide. The N-propyl through N-hexyl C.sub.12 -C.sub.18 glucamides can be used for low sudsing. C.sub.10 -C.sub.20 conventional soaps may also be used. If high sudsing is desired, the branched-chain C.sub.10 -C.sub.16 soaps may be used. Mixtures of anionic and nonionic surfactants are especially useful. Other conventional useful surfactants are described further herein and are listed in standard texts.

Brief Summary Paragraph Right (82):
Enzymes--Enzymes can be included in the present detergent compositions for a variety of purposes, including removal of protein-based, carbohydrate-based, or triglyceride-based stains from surfaces such as textiles or dishes, for the prevention of refugee dye transfer, for example in laundering, and for fabric restoration. Suitable enzymes include proteases, amylases, lipases, cellulases, peroxidases, and mixtures thereof of any suitable origin, such as vegetable, animal, bacterial, fungal and yeast origin. Preferred selections are influenced by factors such as pH-activity and/or stability optima, thermostability, and stability to active detergents, builders and the like. In this respect bacterial or fungal enzymes are preferred, such as bacterial amylases and proteases, and fungal cellulases.

Brief Summary Paragraph Right (98):
The bleaching agents used herein can be any of the bleaching agents useful for detergent compositions in textile cleaning, hard surface cleaning, or other cleaning purposes that are now known or become known. These include oxygen bleaches as well as other bleaching agents. Perborate bleaches, e.g., sodium perborate (e.g., mono- or tetra-hydrate) can be used herein.

Brief Summary Paragraph Right (170):
To illustrate this technique in more detail, a porous hydrophobic silica (trademark SIPERNAT D10, DeGussa) is admixed with a proteolytic enzyme solution containing 3%-5% of C.sub.13-15 ethoxylated alcohol (EO 7) nonionic surfactant. Typically, the enzyme/surfactant solution is 2.5.times. the weight of silica. The resulting powder is dispersed with stirring in silicone oil (various silicone oil viscosity in the range of 500-12,500 can be used). The resulting silicone oil dispersion is emulsified or otherwise added to the final detergent matrix. By this means, ingredients such as the aforementioned enzymes, bleaches, bleach activators, bleach catalysts, photoactivators, dyes, fluorescers, fabric conditioners and hydrolyzable surfactants can be "protected" for use in detergents, including liquid laundry detergent compositions.

Detailed Description Paragraph Right (27):
To a 250 mL three neck, round bottom flask equipped with a magnetic stirring bar, modified Claisen head, condenser (set for distillation), thermometer, and temperature controller (Therm-O-Watch.TM., I.sup.2 R) is added sulfonated, ethoxylated 2-(3-hydroxyphenyl)-3-methylbenzofuran with degree of ethoxylation of about 3 and average degree of sulfonation of about 1.5 (26.5 gm, 0.052 mol, prepared as in Example 20), dimethyl terephthalate (Aldrich, 55.5 gm, 0.286 mol), sulfonated

2-3-(2,3-dihydroxypropoxy)phenyl]-3-methylbenzofuran with average degree of sulfonation of .about.1.5(23.5 gm, 0.052 mol, prepared as in Example 19), ethylene glycol (Baker, 24.2 gm, 0.390 mol), propylene glycol (Baker, 28.7 gm, 0.377 mol), hydrated monobutyltin oxide (M&T Chemicals, 0.17 gm,), sodium cumenesulfonate (Ruetgers-Nease, 4g, .about.4% of final polymer wt.), sodium xylenesulfonate (Ruetgers-Nease, 4g, .about.4% of final polymer wt.), and sodium p-toluenesulfonate (Ruetgers-Nease, 4g, 4% of final polymer wt.). This mixture is heated to 180.degree. C. and maintained at that temperature overnight under argon as methanol distills from the reaction vessel. The material is transferred to a 1000 mL, single neck, round bottom flask and heated gradually over about 20 minutes to 240.degree. C. in a Kugelrohr apparatus (Aldrich) at about 2 mm Hg and maintained there for 3 hours. The reaction flask is then allowed to air cool quite rapidly to near room temperature under vacuum (.about.30 min.) The reaction affords .about.110 gm of the desired oligomer as a crunchy glass. A .sup.13 C--NMR(DMSO-d.sub.6) shows a resonance for--C(O)OCH.sub.2 CH.sub.2 O(O)C-- at .about.63.2 ppm (diester). A resonance for--C(O)OCH.sub.2 CH.sub.2 OH at .about.59.4 ppm (monoester) is at least 10 times smaller than the diester peak. By exhaustive base hydrolysis and gas chromatography of the volatile products, the ratio of incorporated ethylene glycol: propylene glycol is found to be about 1.7.

4. Document ID: US 5728671 A

L9: Entry 4 of 4 File: USPT Mar 17, 1998

DOCUMENT-IDENTIFIER: US 5728671 A
TITLE: Soil release polymers with fluorescent whitening properties

Brief Summary Paragraph Right (5):
The operation of brightening commercial fabrics is one of the highest value-added treatments of a laundry detergent aside from the primary role of soil removal from the fabric itself. With the aid of fluorescent whitening agents (FWA's), also referred to as optical brighteners, optical compensation of the yellow cast that develops on substrates such as fabric can be achieved. The yellow cast is produced by the absorption of short-wavelength light (violet-to-blue). With fluorescent whitening agents this lost light is in part replaced, thus a complete white is attained. This additional visible light is produced by the brightener by means of fluorescence. Optical whitening agents absorb the invisible ultraviolet portion of the daylight spectrum and convert this energy into the longer-wavelength visible position of the spectra. Fluorescent whitening, therefore, is based on the addition of light, whereas the older methods such as "blueing" is achieved by subtraction of light by the addition of blue or blue-violet dyes to textiles.

Brief Summary Paragraph Right (75):
Nonlimiting examples of surfactants useful herein typically at levels from about 1% to about 55%, by weight, include the conventional C.sub.11 -C.sub.18 alkyl benzene sulfonates ("LAS") and primary, branched-chain and random C.sub.10 -C.sub.20 alkyl sulfates ("AS"), the C.sub.10 -C.sub.18 secondary (2,3) alkyl sulfates of the formula CH.sub.3 (CH.sub.2).sub.x (CHOSO.sub.3.sup.- M.sup.+) CH.sub.3 and CH.sub.3 (CH.sub.2).sub.y (CHOSO.sub.3.sup.- M.sup.+)CH.sub.2 CH.sub.3 where x and (y+1) are integers of at least about 7, preferably at least about 9, and M is a water-solubilizing cation, especially sodium, unsaturated sulfates such as oleyl sulfate, the C.sub.10 -C.sub.18 alkyl alkoxy sulfates ("AE.sub.x S"; especially EO 1-7 ethoxy sulfates), C.sub.10 -C.sub.18 alkyl alkoxy carboxylates (especially the EO 1-5 ethoxycarboxylates), the C.sub.10-18 glycerol ethers, the C.sub.10 -C.sub.18 alkyl polyglycosides and their corresponding sulfated polyglycosides, and C.sub.12 -C.sub.18 alpha-sulfonated fatty acid esters. If desired, the conventional nonionic and amphoteric surfactants such as the C.sub.12 -C.sub.18 alkyl ethoxylates ("AE")

including the so-called narrow peaked alkyl ethoxylates and C.sub.6 -C.sub.12 alkyl phenol alkoxylates (especially ethoxylates and mixed ethoxy/propoxy), C.sub.12 -C.sub.18 betaines and sulfobetaines ("sultaines"), C.sub.10 -C.sub.18 amine oxides, and the like, can also be included in the overall compositions. The C.sub.10 -C.sub.18 N-alkyl polyhydroxy fatty acid amides can also be used. Typical examples include the C.sub.12 -C.sub.18 N-methylglucamides. See WO 9,206,154. Other sugar-derived surfactants include the N-alkoxy polyhydroxy fatty acid amides, such as C.sub.10 -C.sub.18 N-(3-methoxypropyl) glucamide. The N-propyl through N-hexyl C.sub.12 -C.sub.18 glucamides can be used for low sudsing. C.sub.10 -C.sub.20 conventional soaps may also be used. If high sudsing is desired, the branched-chain C.sub.10 -C.sub.16 soaps may be used. Mixtures of anionic and nonionic surfactants are especially useful. Other conventional useful surfactants are described further herein and are listed in standard texts.

Brief Summary Paragraph Right (81):
Enzymes--Enzymes can be included in the present detergent compositions for a variety of purposes, including removal of protein-based, carbohydrate-based, or triglyceride-based stains from surfaces such as textiles or dishes, for the prevention of refugee dye transfer, for example in laundering, and for fabric restoration. Suitable enzymes include proteases, amylases, lipases, cellulases, peroxidases, and mixtures thereof of any suitable origin, such as vegetable, animal, bacterial, fungal and yeast origin. Preferred selections are influenced by factors such as pH-activity and/or stability optima, thermostability, and stability to active detergents, builders and the like. In this respect bacterial or fungal enzymes are preferred, such as bacterial amylases and proteases, and fungal cellulases.

Brief Summary Paragraph Right (97):
The bleaching agents used herein can be any of the bleaching agents useful for detergent compositions in textile cleaning, hard surface cleaning, or other cleaning purposes that are now known or become known. These include oxygen bleaches as well as other bleaching agents. Perborate bleaches, e.g., sodium perborate (e.g., mono- or tetra-hydrate) can be used herein.

Brief Summary Paragraph Right (169):
To illustrate this technique in more detail, a porous hydrophobic silica (trademark SIPERNAT D10, DeGussa) is admixed with a proteolytic enzyme solution containing 3%-5% of C.sub.13-15 ethoxylated alcohol (EO 7) nonionic surfactant. Typically, the enzyme/surfactant solution is 2.5.times. the weight of silica. The resulting powder is dispersed with stirring in silicone oil (various silicone oil viscosity in the range of 500-12,500 can be used). The resulting silicone oil dispersion is emulsified or otherwise added to the final detergent matrix. By this means, ingredients such as the aforementioned enzymes, bleaches, bleach activators, bleach catalysts, photoactivators, dyes, fluorescers, fabric conditioners and hydrolyzable surfactants can be "protected" for use in detergents, including liquid laundry detergent compositions.

Detailed Description Paragraph Right (27):
To a 250 mL three neck, round bottom flask equipped with a magnetic stirring bar, modified Claisen head, condenser (set for distillation), thermometer, and temperature controller (Therm-O-Watch.RTM., I.sup.2 R) is added sulfonated, ethoxylated 2-(3-hydroxyphenyl)-3-methylbenzofuran with degree of ethoxylation of about 3 and average degree of sulfonation of about 1.5 (26.5 gm, 0.052 mol, prepared as in Example 20), dimethyl terephthalate (Aldrich, 55.5 gm, 0.286 mol), sulfonated 2-[3-(2,3-dihydroxypropoxy)phenyl]-3-methylbenzofuran with average degree of sulfonation of .about.1.5(23.5 gm, 0.052 mol, prepared as in Example 19), ethylene glycol (Baker, 24.2 gm, 0.390 mol), propylene glycol (Baker, 28.7 gm, 0.377 mol), hydrated monobutyltin oxide (M&T Chemicals, 0.17 gm,), sodium cumenesulfonate (Ruetgers-Nease, 4 g, .about.4% of final polymer wt.), sodium xylenesulfonate (Ruetgers-Nease, 4 g, .about.4% of final polymer wt.), and sodium p-toluenesulfonate (Ruetgers-Nease, 4 g, .about.4% of final polymer wt.). This mixture is heated to 180.degree. C. and maintained at that temperature overnight under argon as methanol distills from the reaction vessel. The material is transferred to a 1000 mL, single neck, round bottom flask and heated gradually over about 20 minutes to 240.degree. C. in a Kugelrohr apparatus (Aldrich) at about 2 mm Hg and maintained there for 3

hours. The reaction flask is then allowed to air cool quite rapidly to near room temperature under vacuum (.about.30 min.) The reaction affords .about.110 gm of the desired oligomer as a crunchy glass. A .sup.13 C-NMR(DMSO-d.sub.6) shows a resonance for --C(O)OCH.sub.2 CH.sub.2 O(O)C-- at .about.63.2 ppm (diester). A resonance for --C(O)OCH.sub.2 CH.sub.2 OH at .about.59.4 ppm (monoester) is at least 10 times smaller than the diester peak. By exhaustive base hydrolysis and gas chromatography of the volatile products, the ratio of incorporated ethylene glycol:propylene glycol is found to be about 1.7.

Terms	Documents
L8 and textiles	4